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QUERY CONTROL FORM			RTIS USE ONLY
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JACKET			
a. Serial No.	f. Foreign Priority	k. Print Claim(s)	p. PTO-1449
b. Applicant(s)	g. Disclaimer	l. Print Fig.	q. PTOL-85b
c. Continuing Data	h. Microfiche Appendix	m. Searched Column	r. Abstract
d. PCT	i. Title	n. PTO-270/328	s. Sheets/Figs
e. Domestic Priority	j. Claims Allowed	o. PTO-892	t. Other

SPECIFICATION

a. Page Missing
b. Text Continuity
c. Holes through Data
d. Other Missing Text
e. Illegible Text
f. Duplicate Text
g. Brief Description
h. Sequence Listing
i. Appendix
j. Amendments
k. Other

CLAIMS

a. Claim(s) Missing
b. Improper Dependency
c. Duplicate Numbers
d. Incorrect Numbering
e. Index Disagrees
f. Punctuation
g. Amendments
h. Bracketing
i. Missing Text
j. Duplicate Text
k. Other

MESSAGE Amendment dated 8-8-03 for claims is illegible. Please provide legible copy of final allowed claims.

Thank You

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RESPONSE

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E-5 (Rev. 10/01/02)

CLAIMS

1. (Original) An improved field display device comprising:

an array of nanotips formed from an array of defects in a crystalline material; and

a transparent plate positioned over the array of nanotips, the transparent plate to produce light when receiving electron emissions from the nanotips.

2. (Original) The improved display device of claim 1 wherein each defect in the array of defects forms a column structure oriented in a direction perpendicular to a plane formed by an interface between the crystalline material and a substrate.

3. (Original) The improved field display device of claim 1 wherein the crystalline material is a hexagonal crystalline material.

4. (Original) The improved field display device of claim 3 wherein the hexagonal crystalline material is a semiconductor.

5. (Original) The improved field display device of claim 4 wherein the semiconductor is Gallium Nitride.

6. (Original) The improved field display device of claim 1 wherein the nanotips are coated with a metal.

7. (Original) The improved field display device of claim 6 wherein the metal is a low work function metal.

8. (Original) The improved field display device of claim 4 wherein the semiconductor is a highly doped semiconductor.

Claims 9-13 (Cancelled).

14. (New) The improved display device of claim 1 further comprising:

a substrate, wherein the formation of the crystalline material over the substrate induces a homogeneous array of dislocations to form said array of defects.

15. (New) The improved display device of claim 14 wherein the nanotips are formed by etching the crystalline material leaving nanotips at the site of each defect in the array of defects.

16. (New) The improved display device of claim 1 further comprising:

a conformal dielectric layer formed over the crystalline material.

17. (New) The improved display device of claim 1 wherein the transparent plate is a glass sheet.

18. (New) The improved display device of claim 1 further comprising:

electrical contacts coupled to the nanotips to allow a driver circuit to apply a voltage to each nanotip, the voltage high enough to cause the ejection of electrons from each nanotip.

19. (New) The improved display device of claim 1 further comprising:

a hexagonally symmetric crystalline substrate, wherein the crystalline material is a hexagonal crystalline material such that the growth of the crystalline material upon the hexagonally symmetric crystalline substrate results in defects perpendicular to the crystalline material and crystalline substrate interface.

20. (New) The improved display device of claim 19 wherein the crystalline substrate is sapphire substrate.

21. (New) The improved display device of claim 20 wherein the crystalline material is Gallium nitride.

22. (New) The improved display device of claim 2 wherein each column structure of defects positioned along an approximate center of a corresponding nanotip.

23. (New) The improved display device of claim 1 wherein the defects are dislocations.

24. (New) An improved field display device comprising:

a substrate;

an array of crystalline nanotips formed over the substrate, each crystalline nanotip in the array of crystalline nanotips surrounding a corresponding column of dislocation defects; and,

a transparent plate positioned over the array of nanotips, the transparent plate to produce light when receiving electron emissions from the nanotips.

REMARKS

In the Office Action of May 8, 2003, claims 1-4 and 8 were rejected under 35 U.S.C. 102(b) as being anticipated by Givargizov et al. (U.S. patent 5,825,122). Applicant respectfully disagrees and submits that Giavargizov is insufficient to create a prima facie case of obviousness because Giavargizov does not discuss or disclose defects.

In fact Applicant respectfully submits that Giavargizov's method of fabrication does not rely on defects. Although Giavargizov does not describe the fabrication method used to create the matrix of filed-emission cathodes, Giavargizov does describe that the silicon whiskers are epitaxially grown on the single-crystalline silicon substrate. Col. 5, lines 47-51. Such epitaxial growth does not rely on defects. Applicant creates nanotips by creating perpendicular defects in the crystalline structure and etching around those defects. Thus the position of the nanotips correspond with the defects. Giavargizov neither describes, discloses nor suggests a structure that positions cathodes to correspond with defects.

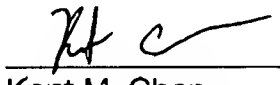
New independent claim 24 also includes the limitation of a nanotip corresponding to a defect which is not shown in Giavargizov and is thus also believed to be patentable. All remaining pending claims depend on independent claims 1 or 24 and thus are believed to be patentable. However, each dependent claim provides additional basis for patentability.

In particular, the Office Action rejects claims 5-7 as having no functional difference over Givargizov et al because it was maintained that a semiconductor material of Gallium Nitride would be equivalent to the Silicon material of Givargizov and that the selection of Gallium Nitride is merely a design choice. Applicant respectfully disagrees. It is important that in Applicant's design, that the defect be approximately perpendicularly oriented with respect to the interface between a substrate and the nanotip growth material. In order to form such defects, particular crystalline structures are needed. GaN on a sapphire substrate has been found to result in such defects.

Giavargizov's epitaxial growth does not depend on defects. Thus, when creating the structures described in Applicant's invention, including a nanotip positioned with defects in the crystalline material, the choice of crystalline material is not merely a design choice.

In view of the preceding amendments and remarks, Applicant respectfully submits that independent claims 1 and 24 are allowable over the cited prior art references. All remaining claims depend on independent claims 1 and 24 and thus are also believed to be allowable over the cited prior art references. Each dependent claim provides additional basis for patentability. If Examiner believes that a teleconference would facilitate prosecution of this application, Applicant respectfully requests that the Examiner contact the undersigned.

Respectfully submitted,



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